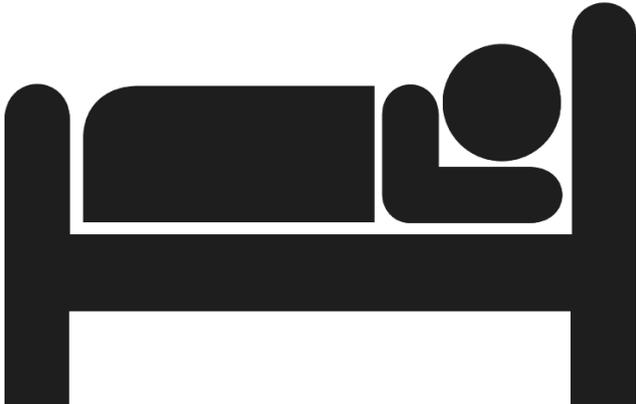
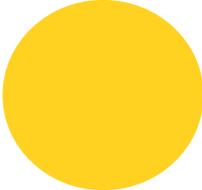


What is consciousness?



Indirect definition

- G. Tononi (2008):
- „Everybody knows what consciousness is: it is what vanishes every night when we fall into dreamless sleep and reappears when we [wake up](#)...“

Consciousness = Qualia

- The critical meaning of consciousness is: the having of states with a qualitative character („qualia“).
- A state is conscious whenever **there is something it is like to be** in that state.

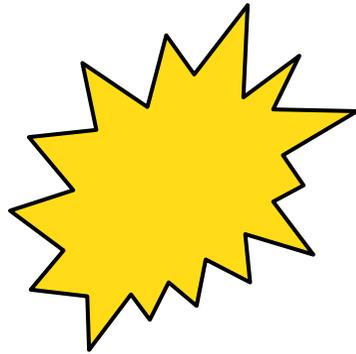
Convention

- In this course, we use the word „consciousness“ as a synonym for the word „qualia“. The both refer to one and the same phenomenon.
- If you use these words differently, please state so clearly and state what you mean by them.

Phenomenon

Name

1.



„Qualia“
„Consciousness“
“
„...“

3.

2.

Description of phenomenon:
„There is something it is like“

Qualia: There is something it is like...

- Here are three quotes by philosophers explaining the expression "there's something it is like".
- The first one is by Th. Nagel, who popularized the phrase.
- »...the fact that an organism has conscious experience *at all* means, basically, that there is something it is like to *be* that organism... [F]undamentally an organism has conscious mental states if and only if there is something that it is to *be* that organism—something it is like *for* the organism.«
- Thomas Nagel (1974) "What is it like to be a bat?" The Philosophical Review LXXXIII, 4:435-50

Qualia: There is something it is like...

- »Consider your visual experience as you stare at a bright turquoise color patch in a paint store. There is something it is like for you subjectively to undergo that experience. What it is like to undergo the experience is very different from what it is like for you to experience a dull brown color patch. This difference is a **difference in** what is often called '**phenomenal character**'. The phenomenal character of an experience is what it is like subjectively to undergo the experience. If you are told to focus your attention upon the phenomenal character of your experience, you will find that in doing so you are aware of certain qualities. These qualities — ones that are accessible to you when you introspect and that together make up the phenomenal character of the experience are sometimes called '**qualia**'.«
- The Stanford Encyclopedia of Philosophy (SEP) (1997/2013) "Qualia"

Qualia: There is something it is like...

- »The subject matter is perhaps best characterized as “the subjective quality of experience”. When we perceive, think, and act, there is a whir of causation and information-processing, but this processing does not usually go on in the dark. There is also an internal aspect; there is **something it feels like** to be a cognitive agent. This internal aspect is conscious experience. Conscious experiences range from vivid color sensations to experiences of the faintest background aromas; from hard-edged pains to the elusive experience of thoughts on the tip of one’s tongue; from mundane sounds and smells to the encompassing grandeur of musical experience; from the triviality of a nagging itch to the weight of a deep existential angst; from the specificity of the taste of peppermint to the generality of one’s experience of selfhood. All these have a **distinct experienced quality**. All are prominent parts of the inner life of the mind.«

Qualia: There is something it is like...

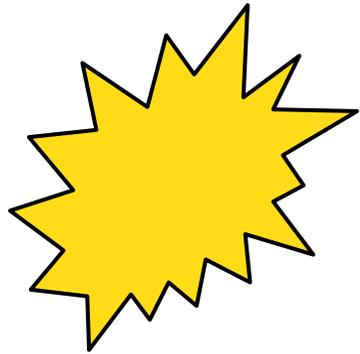
- »We can say that a being is conscious if there is *something it is like* to be that being, to use a phrase made famous by Thomas Nagel. Similarly, **a mental state is conscious if there is something it is like to be in that mental state.** Equivalently, we can say that a mental state is conscious if it has a ***qualitative feel***—an associated quality of experience. These qualitative feels are also known as phenomenal qualities, or ***qualia*** for short. The problem of explaining these phenomenal qualities is just the problem of explaining consciousness. This is the really hard part of the mind–body problem.«
- [David Chalmers \(1996\) "The Conscious Mind. In Search of a Fundamental Theory". Oxford University Press: Oxford](#)

Qualia: There is something it is like...

- Some synonyms (other names) for "qualia" used in these descriptions:
 - SEP: "phenomenal character"
 - Chalmers: "qualitative feel"
 - Chalmers: "conscious experience"

Phenomenon

Name



„Qualia“

„Consciousness“

„Conscious experience“

"Qualitative feel"

"Phenomenal character"

Description of phenomenon:
„There is something it is like“

Qualia exist in different modalities

- Sensory: seeing, hearing, smell, taste, touch
- Emotions / feelings / moods
- Pains
- Proprioception
- Sensations (itching, tickling)
- Thoughts (?)
- Sense of self (?)

Consciousness = Qualia = there is something it is like to...

...see the color red

...have a headache

...be in love

...hear a trumpet

...stroke a cat

...eat a candy

...get stung by a bee

...dream

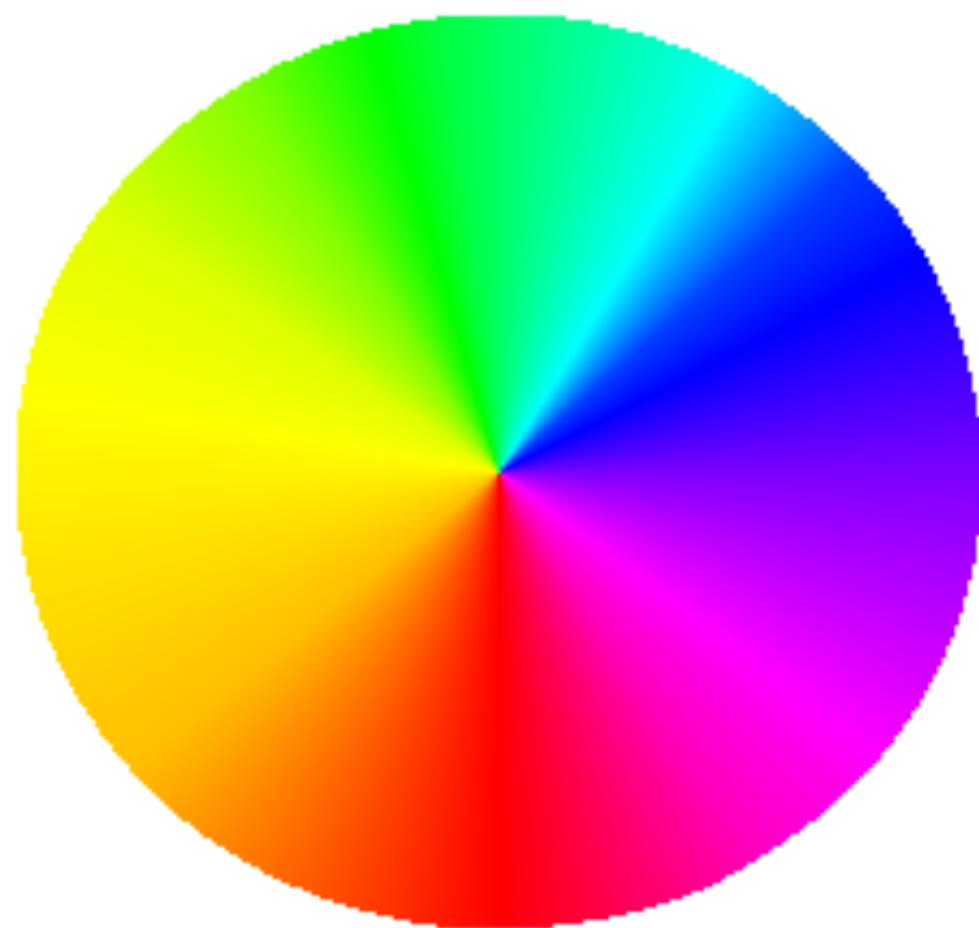
...be surprised by a compliment

...think about your taxes

...have an orgasm

...etc

...etc



Some preliminary clarifications



Qualia

Qualia

Qualia

Qualia

Qualia

Qualia

Qualia

Qualia

...

Qualia

Qualia are like money

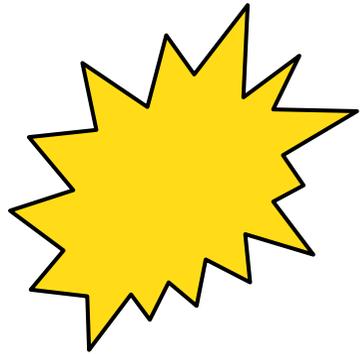
- The totality of all the qualia you have at any given moment is a qualia (because there is something it is like to experience the totality of your qualia). But every subset of qualia is also a qualia, because, again, there's something it is like to experience that particular subset. At the lowest level, you have singular, non-decomposable qualia like the redness of the pen in your hand, the sweetness of the candy in your mouth, the itch in your pinky finger etc. These are qualia, too.
- Analogy: every coin you have is money, but every combination of coins is also money and at the top level, all the coins and bills you have are also money.

Keep your qualia apart!

- Example: you have a qualia of redness when perceiving an external red object (e.g. a rose)
- In addition, there may very well also be other qualia associated with perceiving the stimulus. E.g. Seeing red may evoke an emotion of being energized, and this may happen as quickly as the experience of redness. It can even be that some qualia (e.g. an emotional state of happiness or sadness) influences the redness qualia we get from a certain physical stimulus.
- It's just important to keep the qualia distinct: the redness is a sensory qualia tied to some physical property of the stimulus, the feeling of being energized is an additional qualia that is internally generated

Phenomenon

Name



„Qualia“

„Consciousness“

“
”...“

Description of phenomenon:
„There is something it is like“

Properties of consciousness

Consciousness/qualia: features

- phenomenality, „what-it-is-likeness“ - *essential!*
- subjective, first-person perspective
- structured into sensory modalities, emotions, sensations, pains, thoughts
- immediately given, familiar
- private
- ineffable/incommunicable
- non-transferable?
- unity
- degrees of intensity/vividness
- incorrigible/infallible?
- intentional (but not always)
- pleasure/unpleasure distinction („valence“)
- center/periphery of attention

Qualia are subjective

- Consciousness = qualia are subjective.
- They only exist as **had by a subject**.
- Through consciousness, a subject experiences the world from a unique, „ego-centric“ perspective, the so-called 1st-person perspective.

Consciousness is structured

- ...into sensory modalities, emotions, moods, sensations, pains, thoughts/cognition
- They are all **different kinds of qualia**
- Are thoughts really conscious?
- Are there other things not listed that are experienced consciously?
- Do we have a conscious "sense of self"?

Consciousness is structured

- Sensory qualia are potentially most confusing because of two aspects
 - dependence on physical stimulus
 - representational character (esp. visual system)
- Emotions are at the other extreme and least confusing because they are neither necessarily nor strongly nor specifically tied to physical stimuli nor do they obviously represent anything
- Pain is in between in that it is often related to relatively specific stimuli with a certain location, but we do not usually see pain as a representation of these

Are qualia private and ineffable?

- Consciousness = qualia are private, they're **only accessible by the subject** who has them; they cannot be shared with others; another person cannot experience my qualia, and I cannot describe them to another person so that this person can know or experience them (they are "ineffable" = indescribable and incommunicable)
- Example: try to communicate what it is like to see red to a blind person (who has never had „red qualia“) so that this person consciously experiences red

Are qualia private and ineffable?

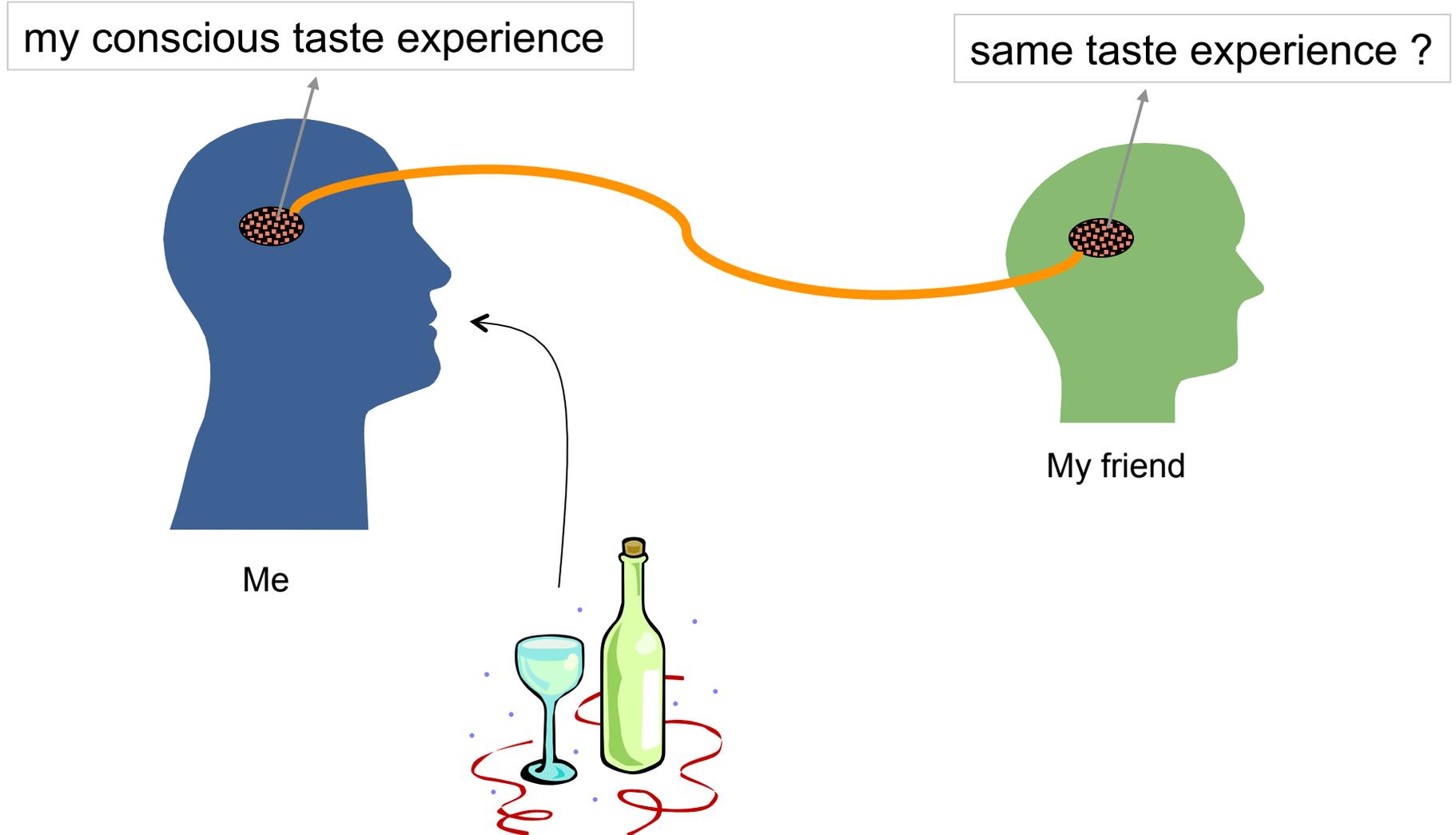
- V.S. Ramachandran:

"The epistemic barrier for communicating qualia is only a natural-language problem. If we skip the language translation and use a neuron bridge, one person can experience another person's qualia"

Privateness of qualia?

- Could my friend experience my qualia, let's say the taste of a certain wine, if she was hooked directly to my brain, maybe through a neuron bridge, as Ramachandran suggests?

Privateness of qualia?



Privateness of qualia?

Several issues are important to answering this question:

- only a bridge of neurons is probably not enough: relevant parts of my friend's brain would have to be identical to my brain.
- ...but which parts?
- would the **whole brain** have to be "copied"?
 - if so, would this mean that I become the **same person** as my friend?
 - if so, what features of the brain would have to be copied? The pattern of connections between the neurons? The structures of the synapses? Or would a molecule-by-molecule copy be necessary? Would we even have to copy the quantum states?
- or is it possible that only a certain localized brain region completely determines my qualia, so that only this **particular brain region** would have to be identical in my friend?
- or might we even have to copy the **whole body**?

Privateness of qualia?

- Is it even possible that only a certain conscious experience can be copied (e.g. the taste of a particular wine)? Could my friend and I have the **same qualia of the wine, but different other qualia?** For example, is it possible that we experience the same taste of wine, but my friend likes this taste, whereas I don't like it?
- Or can we only have the same qualia of the wine if *all* our qualia, if *all* our conscious experience is the same?
- Finally, what does it mean for two individuals to have the same qualia? Does it mean they have to be identical in some sense to be able to experience the same qualia?

The Hogan Twins

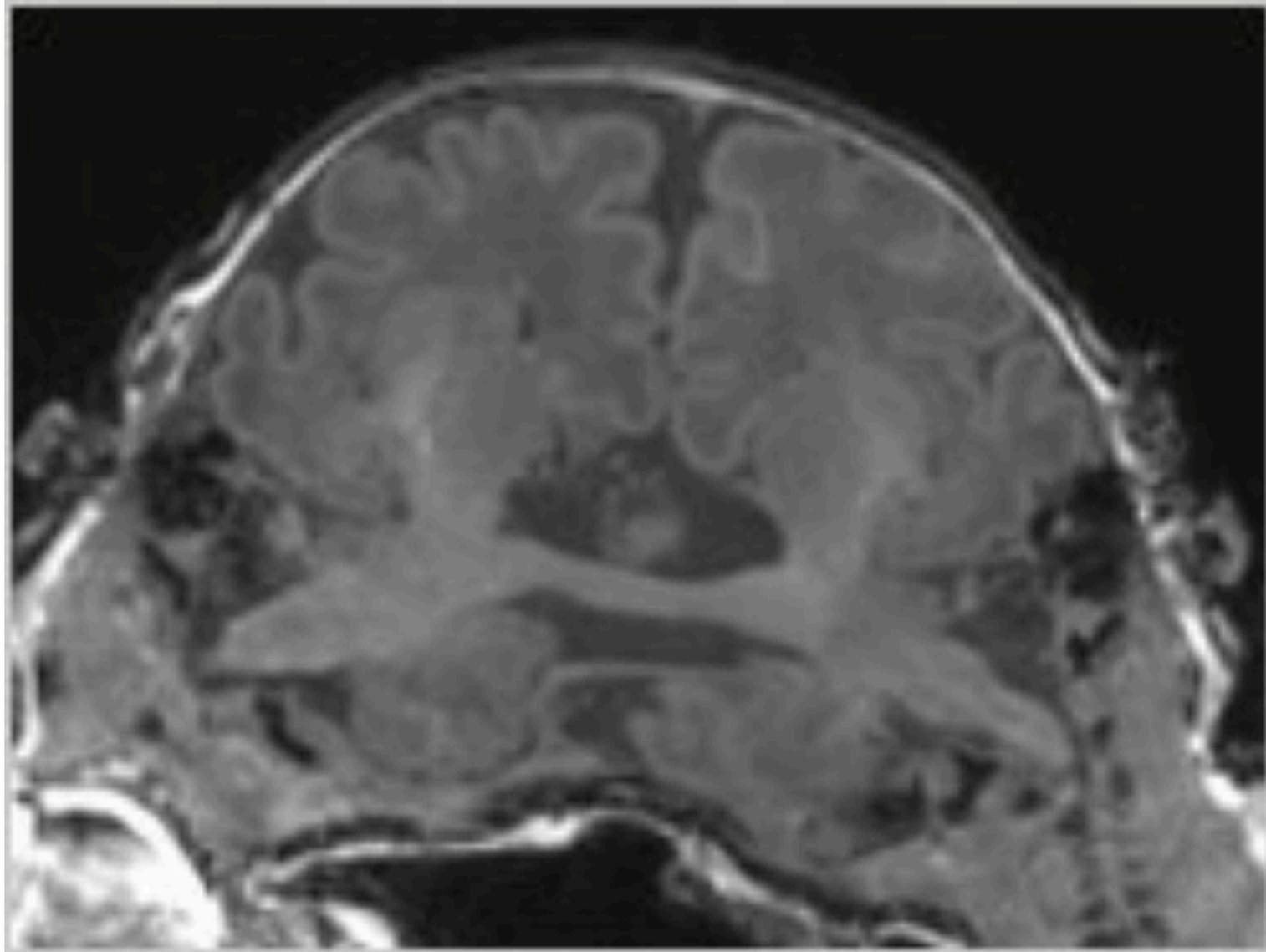


<http://nyti.ms/1HpQfjT>

The Hogan Twins

- Tatjana & Krista, *2006
- Conjoined at head
- Connected Thalami

The Hogan Twins



The Hogan Twins

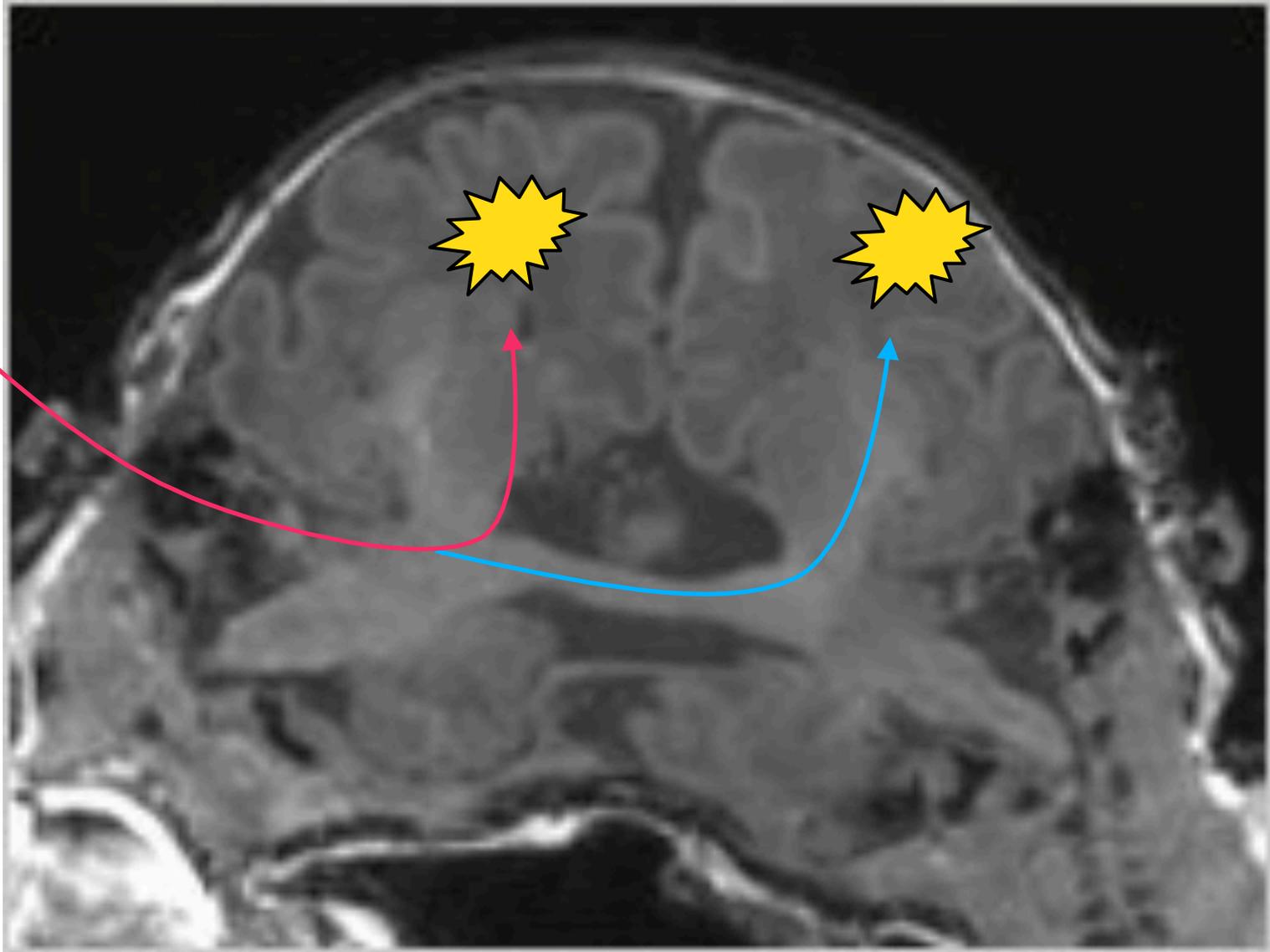
- One twin can see what the other twin is seeing
- ...that visual input comes in through the retinas of one girl, reaches her thalamus, then takes two different courses, like electricity traveling along a wire that splits in two. In the girl who is looking at the strobe or a stuffed animal in her crib, the visual input continues on its usual pathways, one of which ends up in the visual cortex. In the case of the other girl, the visual stimulus would reach her thalamus via the thalamic bridge, and then travel up her own visual neural circuitry, ending up in the sophisticated processing centers of her own visual cortex.

The Hogan Twins

- Most likely explanation based on neuroanatomy: visual qualia of the perceived object are generated independently in the two brains

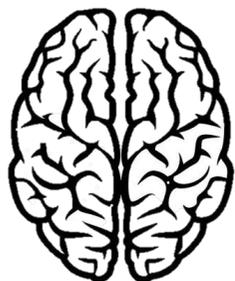
The Hogan Twins

Object



The Hogan Twins

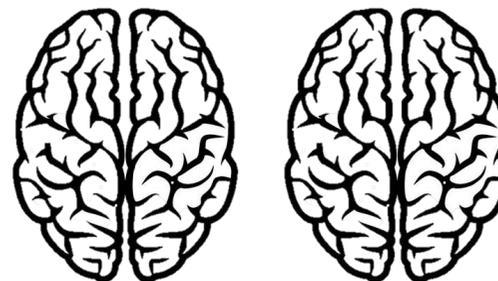
- can share more?
 - sensations (tickling one is felt by the other)
 - one wants to spit out a piece of food the other puts in her mouth
 - „can send thoughts back and forth because they start giggling and you know they're up to something, and they haven't said a word and pretty soon they go pull a prank“ (father)



1 consciousness



?



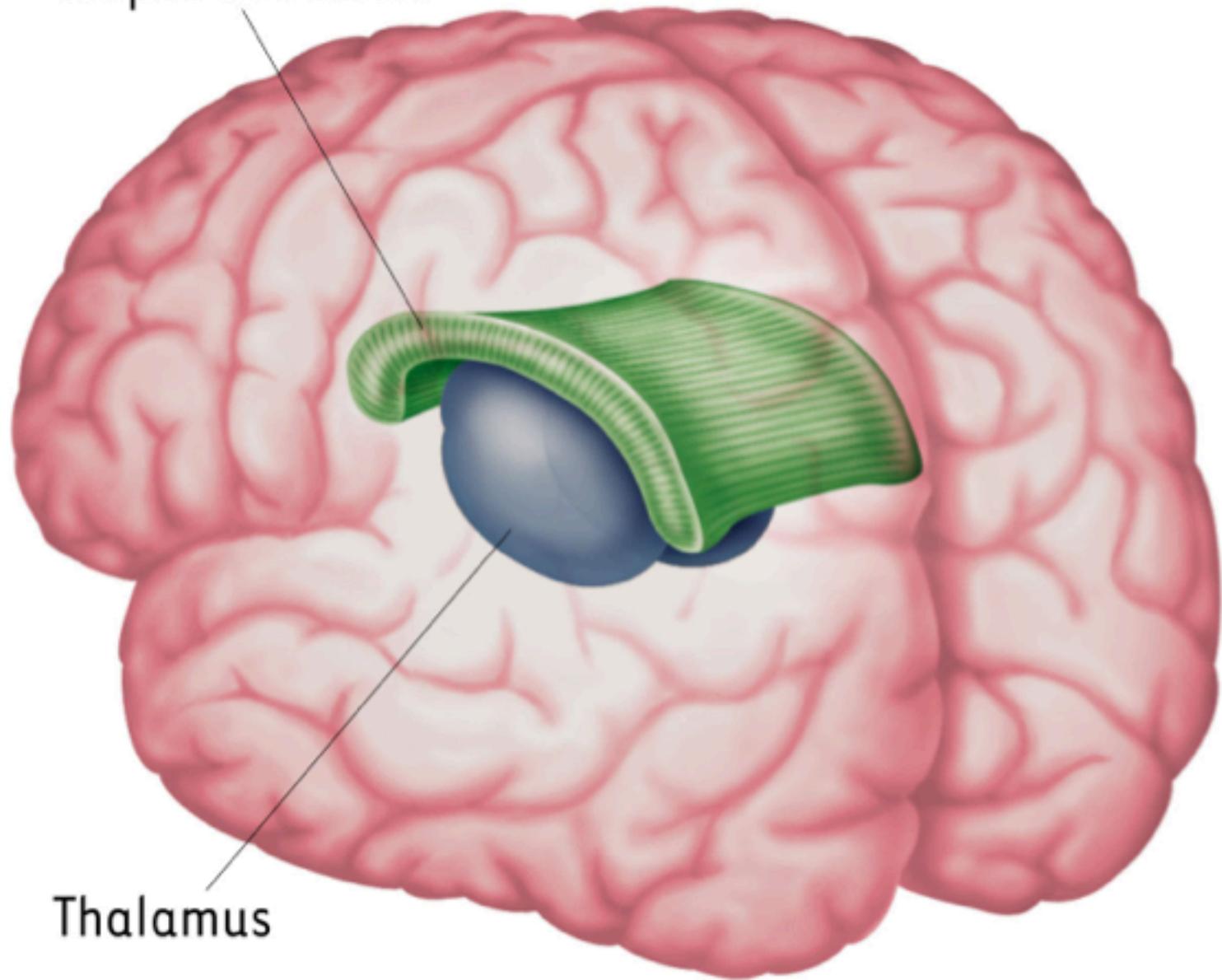
2 consciousnesses



Is consciousness united?

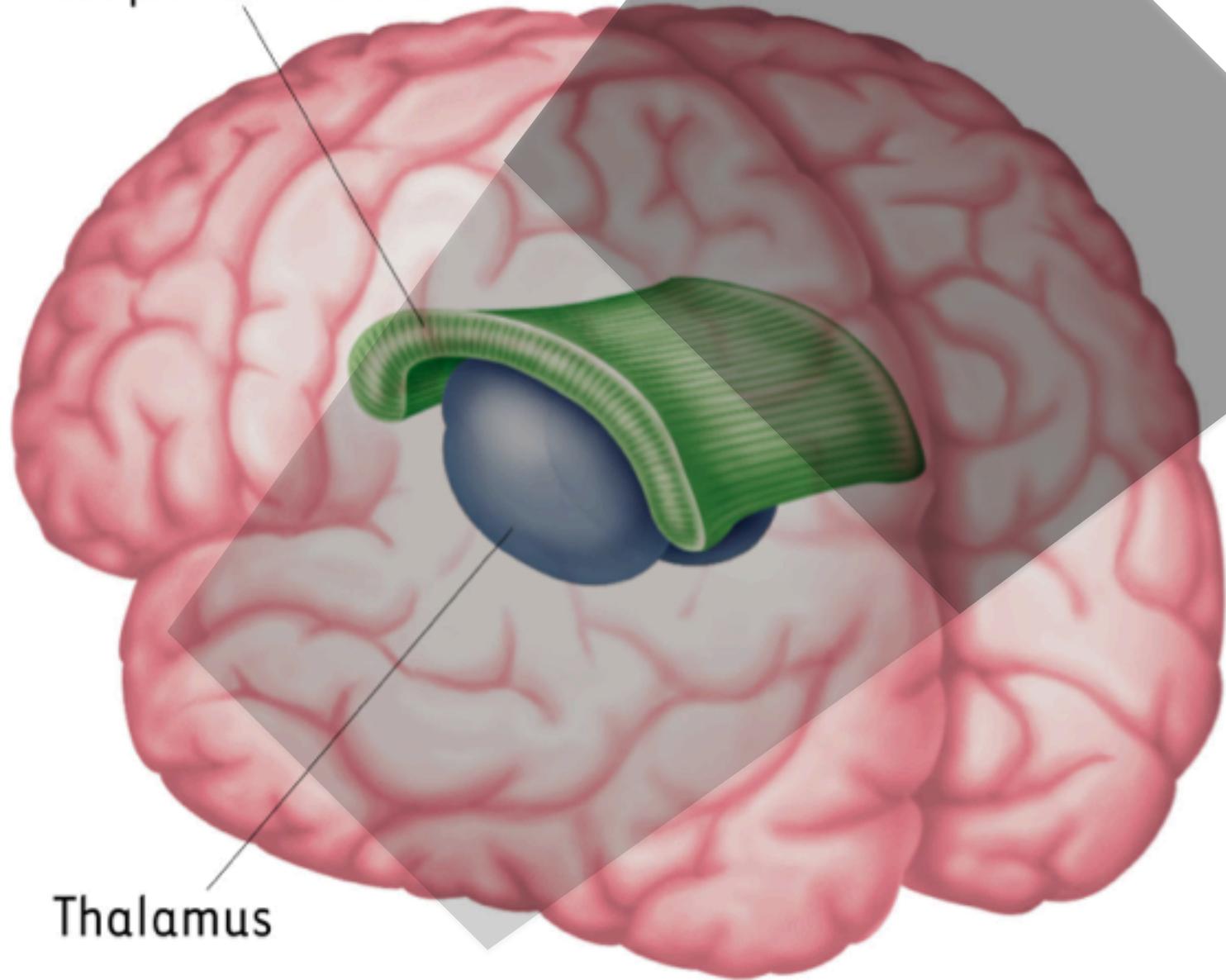
- Consciousness gives us one unified „picture“ of the world. There is only one, undivided consciousness. It seems that consciousness is necessarily unified and indivisible.
- Or can we think of it any other way? Is it possible that one person/subject/self could have two separate consciousnesses? If so, in what sense is it possible?

Body of
corpus callosum



Thalamus

Body of
corpus callosum

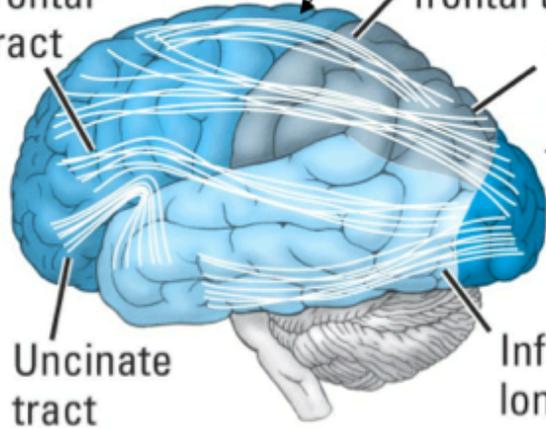


Thalamus

Fig 3.17 - Connections between various regions of the cortex.

Lateral view

Inferior occipital frontal tract



Axon fibers connect one lobe of the brain to another, ...

Superior occipital frontal tract

Superior longitudinal tract

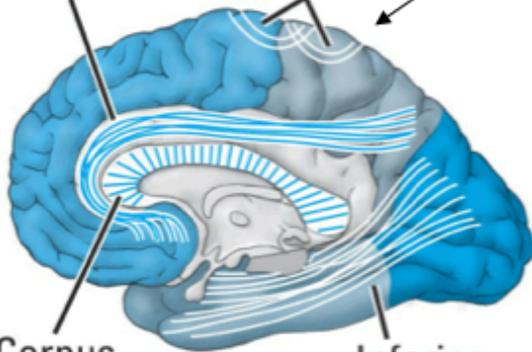
Inferior longitudinal tract

Uncinate tract

Medial view

Cingulum

Arcuate fibers



Corpus callosum

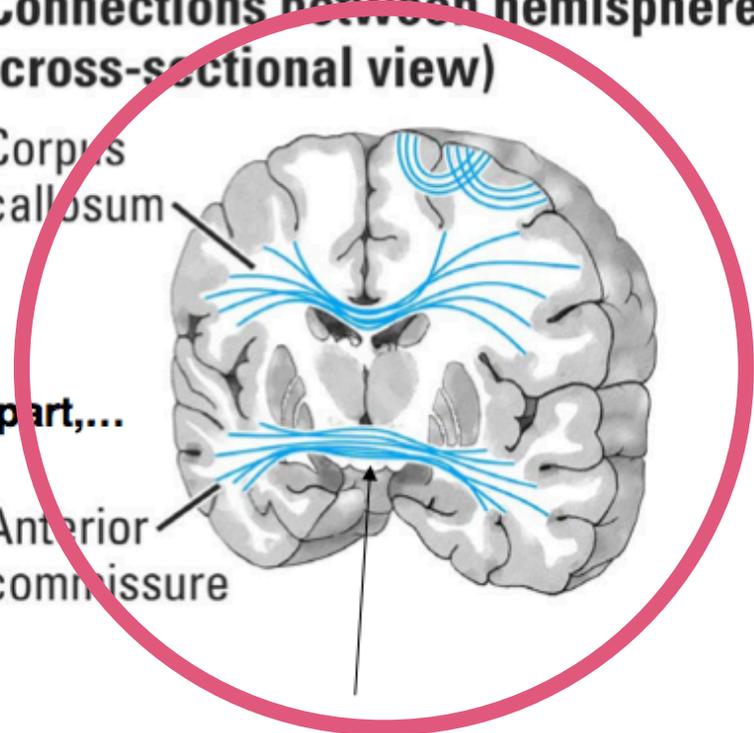
Inferior longitudinal tract

...one part of a lobe to another part,...

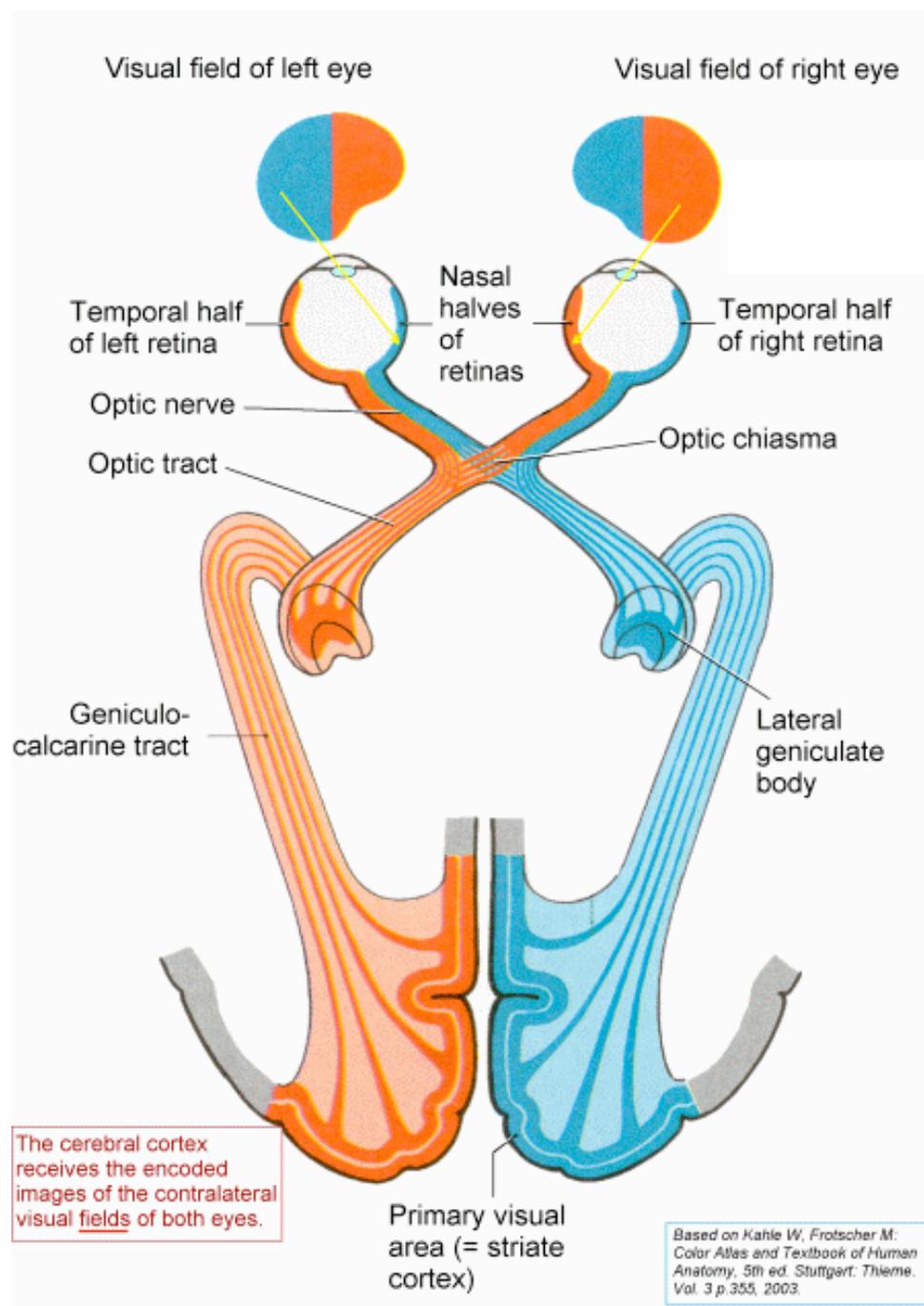
Connections between hemispheres (cross-sectional view)

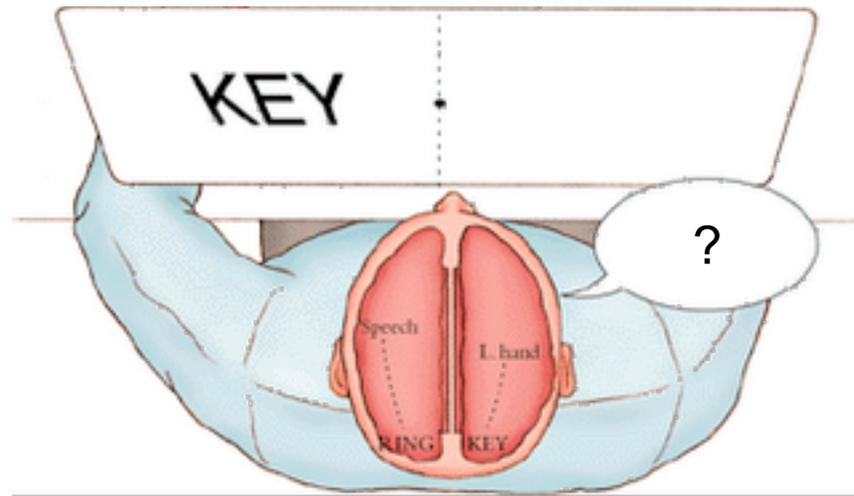
Corpus callosum

Anterior commissure



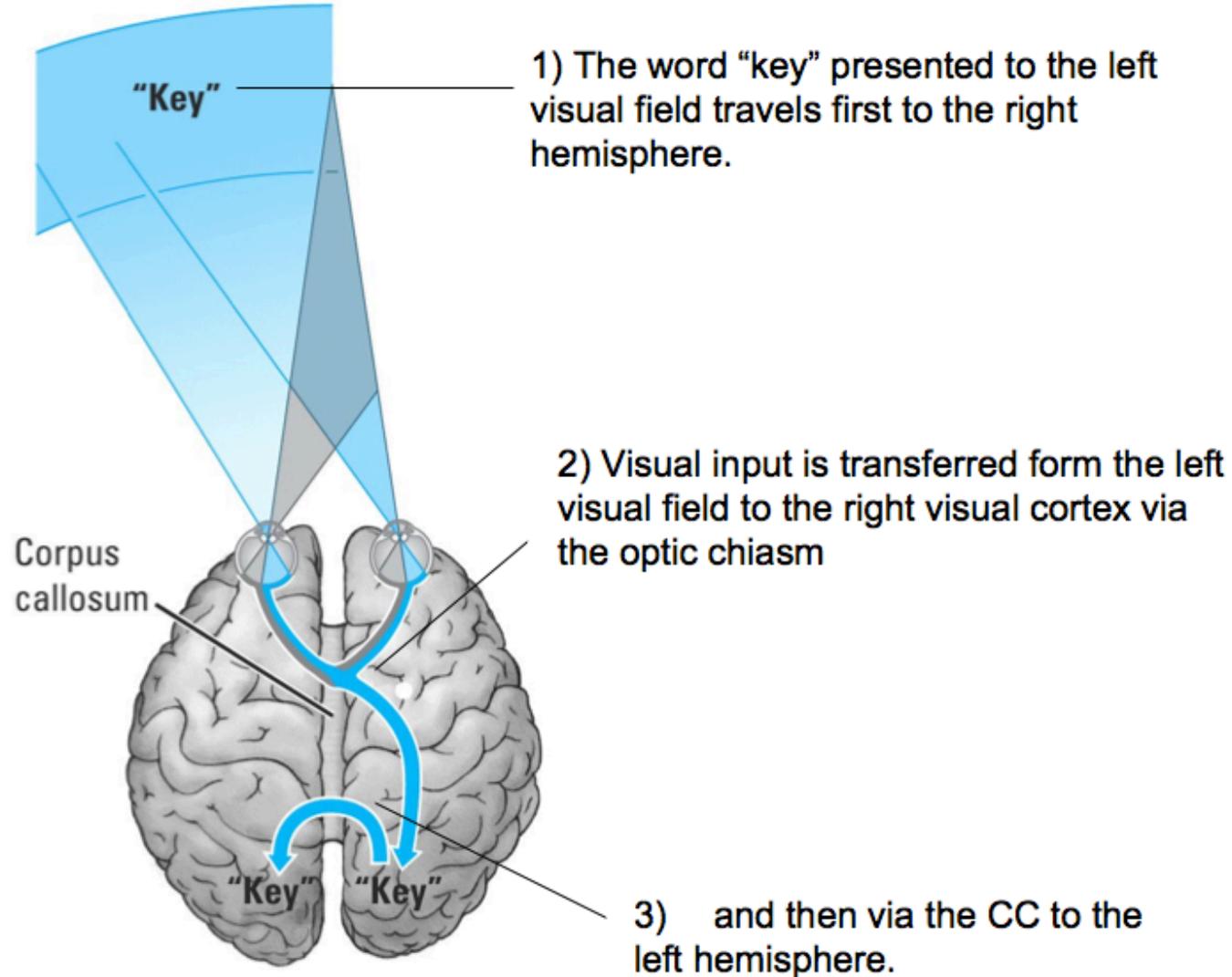
...and one hemisphere of the brain to the other.





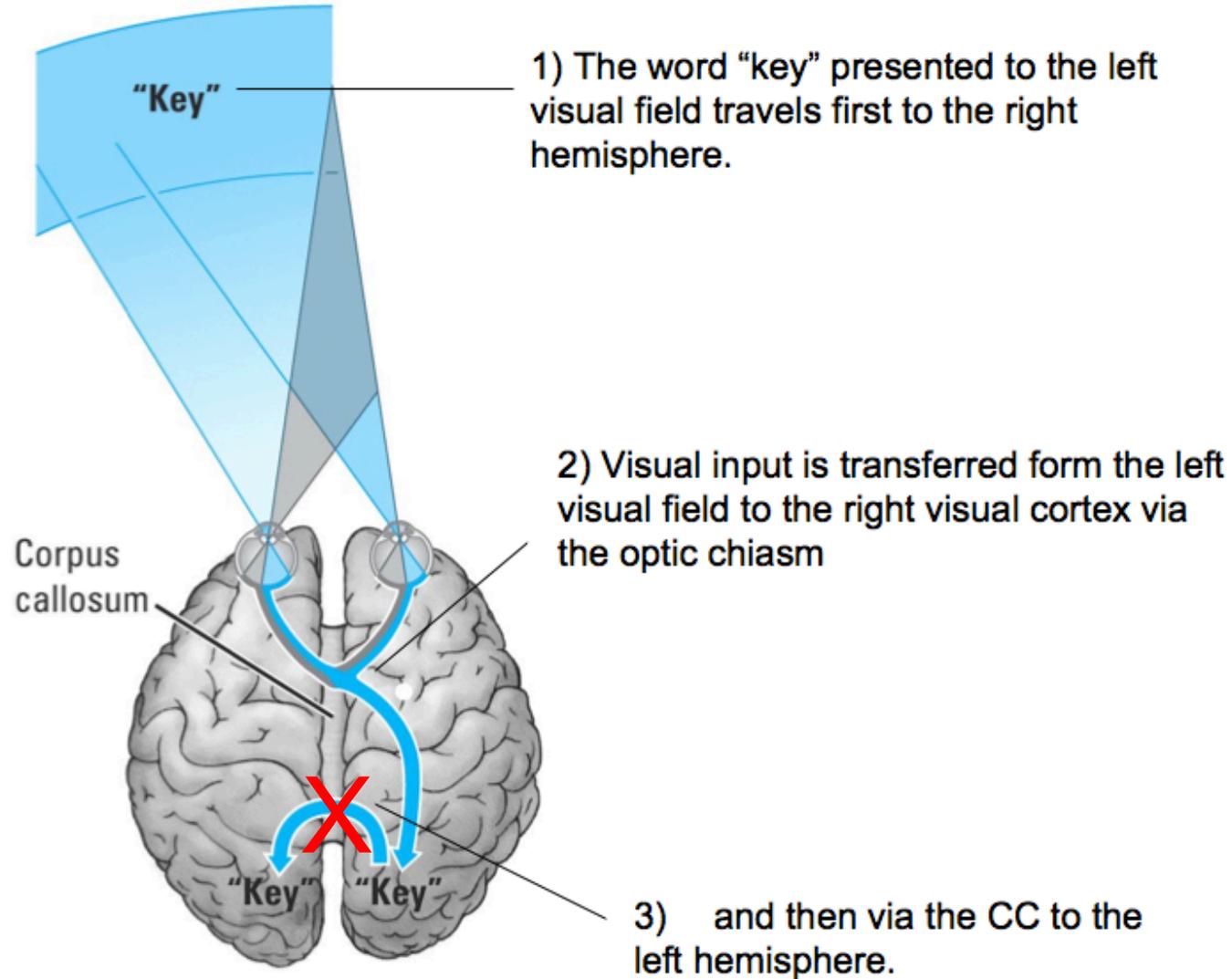
Healthy person

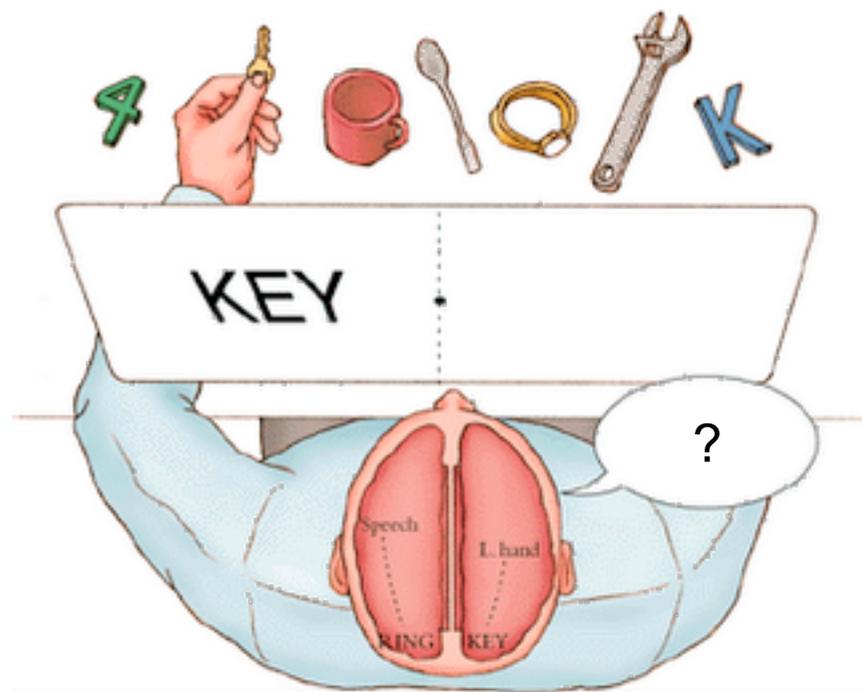
Left visual field

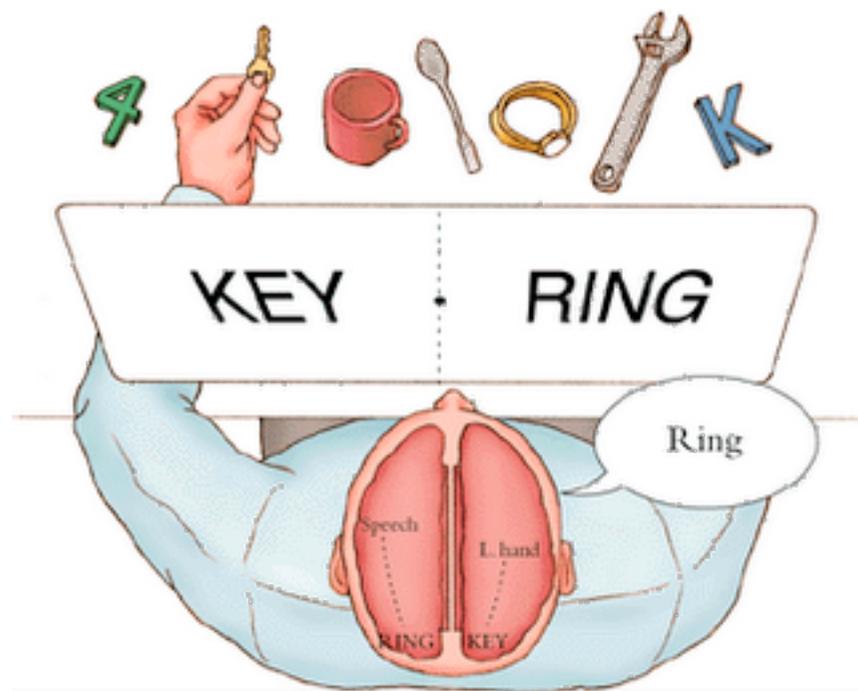


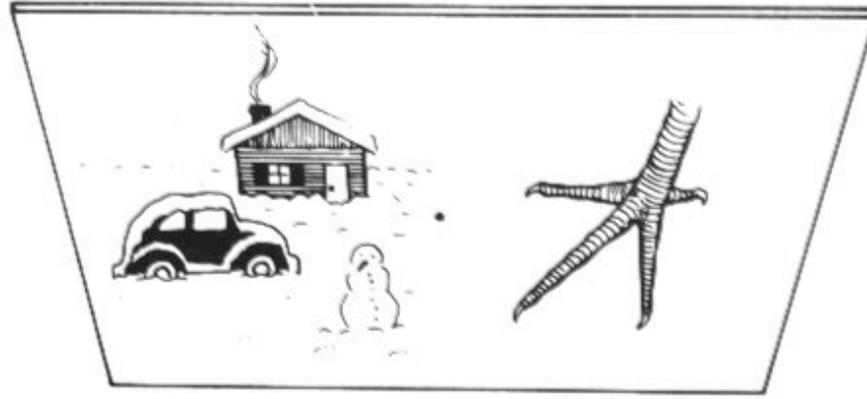
Split-brain patient

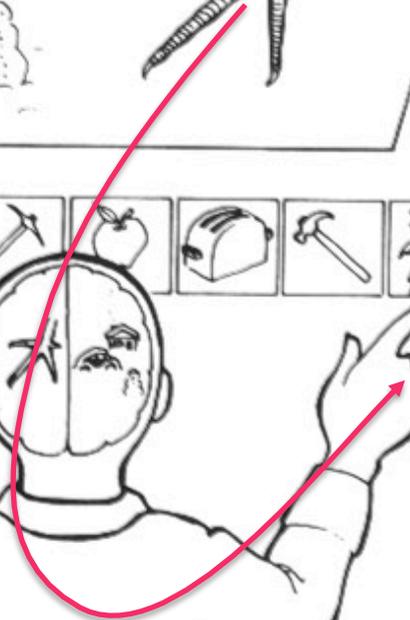
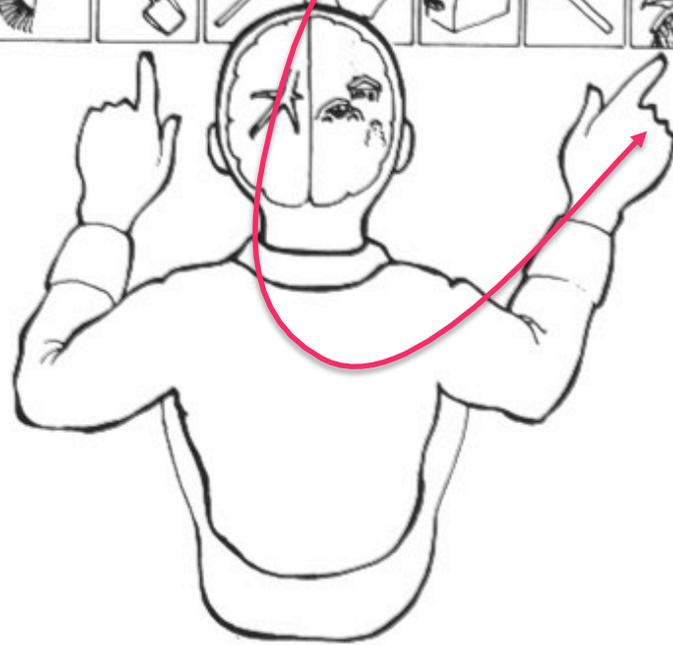
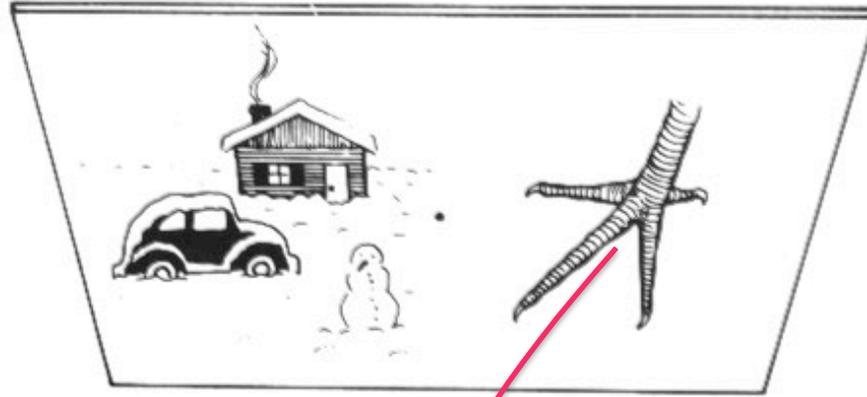
Left visual field

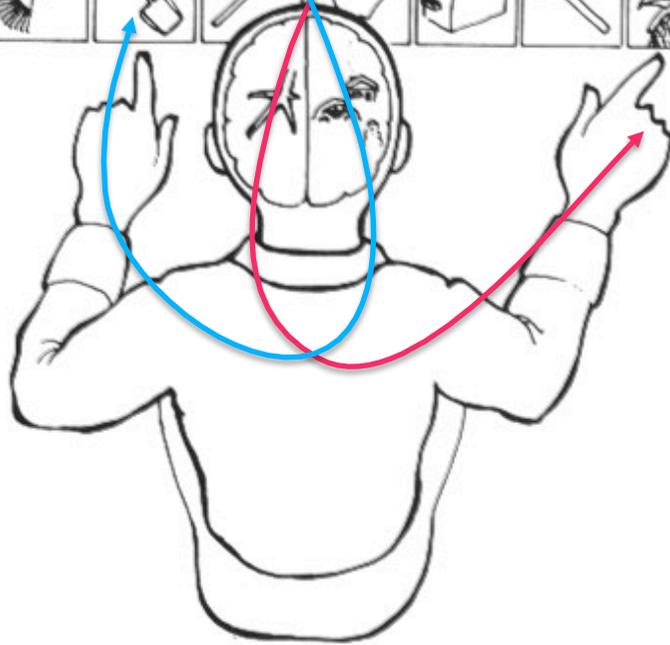
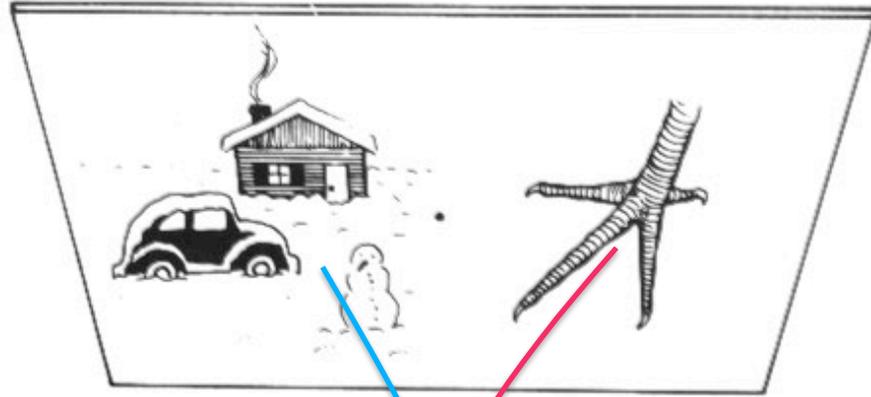












Split-brain patients

- Each hemisphere has an independent focus of attention
- Occasional between-hemisphere conflict
- Two separate selves?
- Divided consciousness? i.e. two separate consciousnesses?

Are qualia necessarily tied to a subject / self?

- When there are phenomenal experiences / qualia, must there also be an experiencing subject or self?
- Or is pure, „selfless“ phenomenal consciousness conceivable? (perhaps in meditation?)

Are qualia necessarily tied to a subject / self?

- The philosopher Searle sees the unity, phenomenality (qualia) and subjectivity of consciousness as *logically* interrelated and non-separable: qualitiveness implies subjectivity, which in turn implies unity. Do you agree?

Self and consciousness

- Some people think that the self and consciousness are inextricably linked:
- Flohr:
 - the occurrence of higher-order, self-reflexive states are necessary and sufficient for consciousness
 - “Phenomenal states are cognitive events that presuppose a model of the world and of the self“
- Damasio:
- Two problems of consciousness:
 - qualia (“mental images”)
 - the sense of self (the observer and owner of and potential actor on qualia/mental images)
 - “The second problem is intimately related to the first, which is nested within it.”
 - “The creation of a first-person perspective, of subjectivity, is the puzzle on which consciousness hinges, and as far as I can see, accounting for subjectivity is necessary to deal with the matter of consciousness in a comprehensive way.”

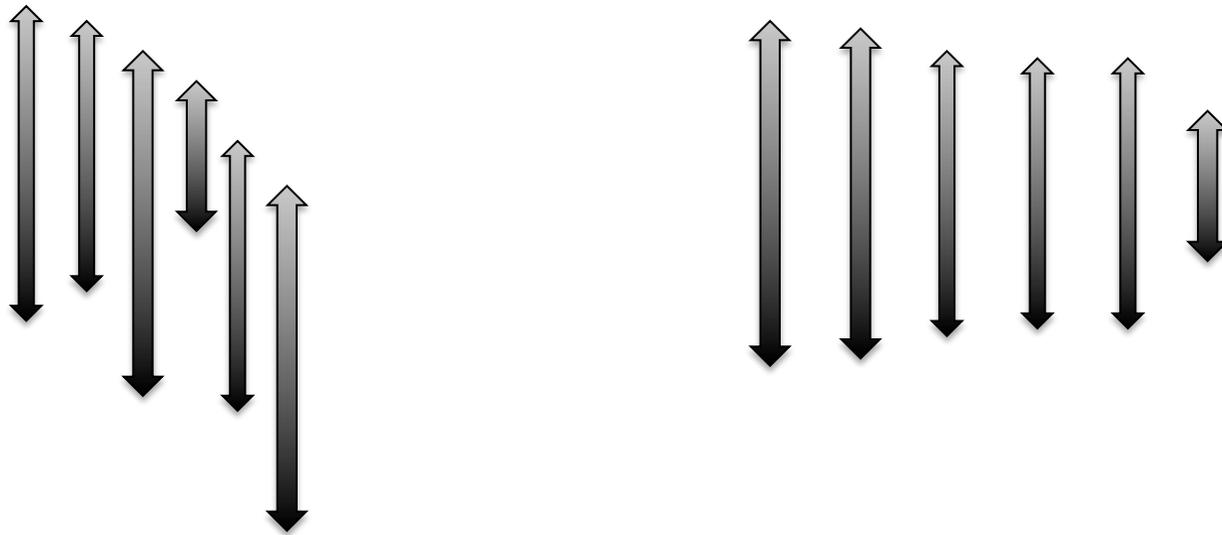
Self and consciousness

- Ramachandran:
 - Since qualia are generated *for* someone or something - presumably 'the self' - the problem of the self and the problem of qualia are really just two sides of the same coin. The self, however, may be just a "form of adaptive self-deception or delusion", which we must nevertheless explain.

Consciousness/qualia: degrees of intensity/vividness

Qualia seem to come in degrees of intensity

- Do some have higher maximum or average intensities than others?
- Do some have wider ranges of intensity than others?
- Which one makes the most sense to you and why?
- Can you order them according to your favored criterion?



Is introspection about consciousness infallible / incorrigible?

- A traditional philosophical claim is that we **cannot be mistaken** about the nature and content of our conscious experience.
- Is that true?

Is introspection about consciousness infallible / incorrigible?

- What does it mean to be wrong about one's consciousness/qualia?
- To be wrong about something (,X') means that X is a certain way (call this ,A') , but one believes X to be some other way (call this ,B').
- One can say: X appears/seems to B, but it is really A.
- Involves a comparison between two ways of beings/ properties: A (the truth) and B (the „illusion“)





Is introspection about consciousness infallible / incorrigible?

- Anosognostic patients: e.g. somebody does not „notice“ that they are blind. They insist on seeing perfectly well, although showing all signs of blindness (bumping into chairs etc.)
- Mistaking burning hot for freezing cold in the first split second after touching a hotplate?
- Mistakes about the emotion one feels?

Is introspection about consciousness infallible / incorrigible?

- Thesis:
- One can be (very) wrong about (unconscious) psychological mechanisms and causes of one's actions/thoughts/feelings.
- One cannot (ever? ususally?) be wrong about the qualia one has, the particular way conscious experiences are like.

Consciousness is intentional

- Many (but not all?) conscious states are intentional, i.e. they **are about** objects or states of the world (including the subject itself).
- They **refer to** things outside themselves (or even to themselves)
- Conscious states can somehow „**reach out**“ into the world.



Intentionality

Some qualia have valence

- There is a fundamental bipolar dimension about some of our conscious states: the continuum from pleasurable to unpleasurable
- Classic example: emotions, feelings („emotional valence“)

Consciousness and related concepts

- **Awareness**: unclear usage. Sometimes used to define consciousness („phenomenal awareness“, „conscious awareness“)
- **Mind**: the totality of informational states and processes in the brain, including conscious and non-conscious states/processes
- **Cognition**: in a broad sense everything that is occurring in the brain between sensory input and behavioral output, but mostly used more narrowly in contrast to perception and emotion; includes both conscious and unconscious states/processes
- **Perception**: unclear usage: may or may not include consciousness / qualia
- **Experience**: unclear usage: sometimes used as a synonym for consciousness / qualia (like in this course)

Consciousness and attention

- Conceptual difference: **attention** is a **process**, while **consciousness** is a **state** or property
- **Attention selects**, determines, and modulates conscious experience (→ inattention blindness, backward masking, attentional feature modulation)
- However, there seems to be conscious experience outside of attention (e.g. the fringes of our visual field)
- Attention may render conscious perception more detailed and vivid, but might not be strictly necessary for conscious perception